

A S B E S T O S B U L L E T I N

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PART 1. MINING.CANADA

- 115 ASBESTOS. H.M. Woodrooffe. Can. Mining Journal 1962
83, No.2, p. 117.

1961 year was the second in succession to record a significant increase in shipments of group 4 fibre. An additional 15% of this valuable grade moved to the market. Smaller increases were reported in shipments of group 5 and 6 fibre, but shipment of 7 group were lower.

European Economic Community imports approximately one half of its asbestos requirements from Canada, an amount equivalent to about 15% of Canadian production. It is in this group of countries that competition from Russian fibre has been most important in recent years. It is significant to note, however, that while the U.S.R.R. supplied 26% of ECM requirements in 1959, its position declined to 21% in 1960.

- 116 THE CANADIAN MINERAL INDUSTRY AND ITS GROWING MARKETS.
Can. Mining Journal 1961, 83, No.2, p.82.

1961 asbestos industry set a production record with shipments of 1,171,245 tons. The increase in group 4 shipments was largely responsible for the increase in both shipments and values.

Advocate Mines Ltd., continued development of a large new mine at Baie Verte: construction is expected to start in 1962 on a 5,000 ton-per-day mill with initial production scheduled for mid - 1963.

- 117 LAKE ASBESTOS OF QUEBEC. The Can. Mining & Metallurgical
Bull. January 1962, p.66

The net revenue at the Lake Asbestos of Quebec mine in the first nine months of 1961 amounted to \$2,484,832 a 45% increase over the corresponding period of 1960. The Black Lake Mine milled 1,295,088 tons to produce 71,122 tons of fibre. Mr. A.B. Davidson, president of U.S.C. says record fourth quarter shipments and proceeds are expected.

- 118 THE CANADIAN ASBESTOS INDUSTRY. R. Guimond, Precambrian
(Winnipeg) 34, 1961, May 6-14, 16-22, 24-25, 28-31, June
33, 35-36, 38-42

Deposits, production and markets are described. The operation of individual companies are briefly outlined. Procedures for quality control are discussed.

- 119 MINERAL PRODUCTION 1961. Can. Mining Journal 1962, 83, No.2, p.74.

Asbestos production continued to expand and output rose to a record of 1,171,000 tons at \$131 millions, up 5% in quantity and 8% in value from the former high attained in 1960. Gains were recorded in all three producing provinces.

	1961	tons	1960
Quebec	1,098,272		1,054,424
Ontario	27,200		23,284
British Columbia	45,773		40,748

- 120 ASBESTOS IN ONTARIO. Eng. Mining J. January 1962, 163 No.1, p.141

Hunch Mines, inactive for some years, has been reactivated to explore two asbestos prospects in Harker and Lamplugh Twps. (Ontario), east of Matheson. A magnetometer survey has indicated a wide zone crossing both properties believed to be favourable for asbestos deposition.

SOUTHERN RHODESIA

- 121 ASBESTOS IN SOUTHERN RHODESIA. The Mining Journal, March 2, 1962

Plans for an expansion programme reported to be going to cost about £3,000,000 are proceeding at Filabusi, Southern Rhodesia. The company owning the mine, Pangani Asbestos Mines Ltd., have bought out the nearby Hart asbestos mine. Exploratory work is reported to be in advanced stage at the Pangani mine, the orebody is said to be rich, and the investigation of the main asbestos deposit complete.

- 122 MINERALS. The Mining Journal, March 30, 1962, p.323.

A consortium of European and South African finances is backing a £1,500,000 development scheme at the Pangani asbestos mine near Filabusi, Southern Rhodesia. The company hopes to produce asbestos worth £2,250,000 a year for export. Most of the capital for the project has come from Switzerland, South Africa, Belgium, Austria and France.

- 123 MINERAL PRODUCTION - ASBESTOS. Rhodesian Mining Journal 1961, 32, No.412, p.21.

Asbestos production for 11 months ended November 1961; 135,309 tons, value £7,394,380. This figure represents 21.25% increase in tonnage.

- 124 MINES HISTORY No. 24: SHABANIE. Chamber Mines
(Rhodesia) J. Sept. 1961, 3 pp. 26-30.

SOUTH AFRICA.

- 125 CROCIDOLITE FROM THE KOEGAS-WESTERBERG AREA, SOUTH AFRICA.
J.J. Le R. Cilliers, A.G. Freeman, A. Hodgson and
H.F.W. Taylor.

The geology of the Koegas area of Cape Province is described with particular reference to the occurrence of crocidolite. Twenty-two samples were examined by chemical analysis, X-ray diffraction and differential thermal analysis.

126. AFRICA - MAJOR ASBESTOS SOURCE. Peter Holz. Can. Mining J.
July 1961, 82, pp. 57-60.

127. ASBESTOS MINING AT MIMBA HILL, EASTERN TRANSVAAL. The
Mining Mag. 1962, 106, No.2, p.86.

62 This Company is the biggest single producer of chrysotile asbestos in South Africa. At present only grades 4 and 5 are mined but in the near future, grades 6 and 7 will be produced as well. Over the past year African chrysotile has produced an average of 1,214 tons of fibre a month or 14,574 tons for the year. The company also mines a number of claims under tribute. From these were produced 5,760 tons of grade 4 fibre and 4,180 tons of grade 5 for a total of 186,834 tons of ore milled.

U.S.A.

128. JEFFERSON LAKE ASBESTOS CORPORATION. Mining World,
January 1962, 24, No.1, p.59

Jefferson Lake Asbestos Corporation reports that its engineers, consultants and contractors have revised the flowsheets and are incorporating improvements in the asbestos processing plant now under construction near Copperopolis, California. As a result, completion of the plant and beginning of operations are now scheduled for May 1962. Based on the assaying of cores taken from the property, the estimate of ore continues to increase over the visual estimates originally made. To date, the proven millable ore is estimated at approximately 23,000,000 tons.

129. COALINGA ASBESTOS COMPANY. Mining World, January 1962, 24, No.1, p. 59.

Coalinga Asbestos Company, Inc., a joint venture of Johns-Manville Products Corporation and the Kern County Land Company, is scheduled to start operations in early 1962 near Coalinga. It will mine and beneficiate chrysotile to produce up to 25,000 tons annually of high quality "shorts" for use in cement, asphalt and vinyl-asbestos products.

U.S.S.R.

130. AMPHIBOL ASBESTOS ON THE WESTERN SLOPE OF THE NEAR-POLAR URALS. M.V. Fishman and B.A. Goldin. Trudy Comi Filiala Akad. Nauk S.S.S.R. 1959, 7, No.7, pp. 103-107
131. MAGNESIUM ANTHOPHYLLITE ASBESTOS FROM TUVA. G.V. Pinus. Zapiski Vsesoyuz. Mineral. Obshchestva 1961, 90, pp 296-298.

PHILIPPINES

132. PHILIPPINES ASBESTOS. Eng. Mining J. December 1961, 162, No.12, p. 164.

Several asbestos deposits in Zambales province on the west coast of Luzon have excited interest in local mining circles. Other deposits have been found in Ilocos, Pangasinan and parts of Mindanao but no development has been done. The Philippine Bureau of Mines is investigating the deposits and will make a detailed report.

AUSTRALIA.

133. MORE BLUE ASBESTOS FROM AUSTRALIA. Mining J. September 29, 1961.
134. CANADIAN PATENT 628,028 INSTALLATION FOR CLASSIFYING ASBESTOS FIBRE. L.P. Bonneau (to Quebec Dept. of Mines). September 26, 1961.
135. U.S. Patent 2,996,183. CONVEYOR FIBRE CLEANER. Russum, R. Gaillard. (to Johns-Manville)

Air jets from opposite sides clean the dust from asbestos fibres as they travel along an endless belt.

PART 2. ASBESTOS-CEMENT

136. USING ASBESTOS CEMENT PIPES TO LINE ARTESIAN WELLS.
P.A. Anatol'evskii. Mont. i spets. rab. v stroi.
(Assembling and Specialized Operations in Construct)
August 1961, 23, No.8, pp. 20-21.
137. LIGHTWEIGHT PANELS FOR THE WALLS AND CEILINGS OF COMPRESSOR
AND PUMPING STATIONS. V.M. Pusanov. Stroi. truboprov.
(Pipe-line Construct.) Oct. 1961, 6, No.10, pp. 28-30.
138. PIPELINE REPLACES RAILROAD AS PULP MOVER. Chem. Eng.
Feb. 19, 1962, 69, No.4, pp. 74, 76.

Great Northern Paper Co. has installed seven miles of epoxy-lined asbestos cement pipe to carry sulphite pulp to its paper mill at East Millinocket, Maine.

139. U.S.P. 3,003,553. FORMING TUBES OF ASBESTOS-CEMENT.
Johns-Manville Corp.

This invention relates to a machine of the type including two units for the continuous manufacture of asbestos-cement pipes without intermediate stopping and loss of time.

140. RUSSIAN STANDARD (GOST) FOR PORTLAND CEMENT FOR ASBESTOS
CEMENT ARTICLES. Byull. Stroit. Tekh. 1961, 18, No.11,
16-17 (Erratum)p.24).

GOST 9835-61 "Portland cement for the production of asbestos cement articles" contains the specifications for the compressive and tensile strength, chemical composition, particle size, packaging etc., of two portland cement grades, 500 and 600, used in asbestos cement compositions.

141. ON PROVISIONAL TECHNICAL INSTRUCTIONS FOR CARRYING OUT
AND ACCEPTING INSTALLATION WORK OF ASBESTOS CEMENT
UNDERGROUND GAS PIPELINES IN TOWNS, INHABITED PLACES AND
INDUSTRIAL ESTATES. Bull. Stroit. Tekhn., 1961, 18, No.12, 8-9

These instructions (CH 185-61) relate to gas pipelines working at low pressures of up to 0.05 kg/cm². In these pipelines, apart from cast iron connecting pieces (see the following abstract), the

use of asbestos cement double-collar couplings is also permissible. In this case, apart from synthetic resin packing rings, the joints are additionally tightened using liquid polymer-cement-sand compositions.

- 142 ON THE USE OF ASBESTOS CEMENT TUBES FOR UNDERGROUND GAS PIPELINES. Bull. Stroit. Tekhn. 1961, 18, No.12, 30-31.

The replacement of steel gas pipelines by asbestos cement ones is very important from the standpoint of national economy. Their mechanical strength is not so high as that of steel pipes, but they are less expensive and possess a high corrosion-resistance. Based on experiments carried out in the Andishan district (Bashkirskaya ASSR), in Zhitomir district and other places, "Provisional technical instructions for planning asbestos cement underground gas pipelines outside inhabited places and industrial estates" (CH 182-61) specify in detail technical requirements for asbestos cement gas pipelines working at pressures of up to 5 kg/cm.

- 143 BRITISH PATENT 870,054. IMPROVEMENTS IN IMPREGNATING CEMENT-BONDED ASBESTOS BOARD. James Henry & Thomas Davis, Elwyn - Joshua.

Process for impregnating asbestos cements with polysiloxane solutions.

- 144 PROBLEMS IN DEVELOPING THE PRODUCTION OF ASBESTOS CEMENT PIPES. F.N. Kitaev. Stroi. mat. (Bldg. Materials) August 1961, 7, No.8, pp. 19-23.

- 145 GERM. P.1,123,610. MACHINE FOR CORRUGATING FIBRE CEMENT SHEETS. K.A. Oesterheld.

A machine for corrugating fibre cement sheets comprises a suction box divided lengthwise into separate compartments and provided with a rigid corrugated cover with suction apertures and, on the top of the rigid cover with a sheet of a flexible air-permeable material, which is stretched by means of weights.

- 146 SOUTH AFRICAN P.R. 61/1299. FORMING SHAPED ASBESTOS CEMENT PRODUCTS. Johns-Manville Corp.

A process is described in which a mixture comprising asbestos, cement water and a hydromodifier is formed when in the plastic state and allowed to solidify.

- 147 LARGE ASBESTOS-CEMENT CORRUGATED SHEETS. I Koppel.
D. Olaru and L. Barbulovici. Bull. Stud. Cercetari Stiint.
Constr. Mat. Constr. Architect. Sis (INCERC-ASCAS,
Bukuresti), 1960, No.3. 214-225.

Large asbestos cement corrugated roofing sheets for factory buildings and the like are described. The dimensions of these sheets are: 1800 x 1210 x 6 mm, the rib spacing is 140 mm., the rib height is 45 mm. The tensile strength of these plates is 160 kg/cm². The price of these plates (per sq. metre) is lower, by 2.8 - 4%, than that of 1200 x 678 x 5.5 mm plates.

- 1 148 GERMAN P.1,123,244 PRODUCTION OF PLATES OR SHAPED BODIES
7 FROM FIBRES, ESP. GLASS FIBRES AND HYDRAULIC BINDERS OR
GYPSUM. Institut fur Hobztechnologie und Faserbaustoffe.

A dry mixture of fibres and binder is interspersed between sheets of a moisture-containing web and subjected to hot-pressing, whereby steam generated in the moist web is condensed within the dry mixture effecting the setting of the latter.

- 149 THE STRENGTH AND FROST RESISTANCE OF ASBESTOS CEMENT
SHEETS DEPENDING ON THEIR DENSITY. I.I. Bernei.
Stroit Mat, 1962, 8, No.2, 6-9.

The application of increased pressures in the production of asbestos cement sheets, (up to 200 kg/cm²) resulted in increased density (up to 1,83 g/cm³), increased bending strength (up to 203 kg/cm² for corrugated roof tiles, and up to 407 kg/cm² for experimental sheets) and increased frost-resistance (the weight of sheets produced under different pressures was practically the same)

- 150 GERMAN P.1,122,430. MACHINE FOR CORRUGATING PLASTIC
SHEETS. F.L. Smidth & Co. A/S, Copenhagen.

A machine for corrugating flat plastic sheets of asbestos cement comprises two sets of forming bars provided with means for horizontal and vertical positioning.

- 151 RUSSIAN STANDARDS FOR DRAWN ZINC-PLATED NAILS FOR ASBESTOS
CEMENT ROOFINGS (GOST 9870-61), Byull, Stroit. Tekhniki,
- 1962, 19, No.2, 26.

- 152 GERMIN P.1,122,893. MACHINE FOR MECHANICALLY SEPARATING ASBESTOS CEMENT SHEETS FROM MOULDS AND MECHANICALLY STACKING THE PLATES AND MOULDS SEPARATELY. Eternit A.-G.

This machine is provided with means for holding the mould down when the asbestos sheets (formed and ready for separation) is lifted upwards by means of a suction device.

- 153 ASBESTOS-CEMENT SUBSTRATES AND THEIR PAINT REQUIREMENTS. New York Society for Paint Technology. Official Digest 1961, 33, 442, pp. 1346.

This paper describes the results obtained with a variety of paints selected as primers for normal-cured asbestos-cement sheets topcoated with a chrome green pigmented, linseed oil house paint. Several surprising and unexpected observations were made.

A simple laboratory method, devised for testing the effectiveness of a primer as a barrier between an alkaline substrate and an alkali-sensitive topcoat, is described and illustrated.

- 154 EXPERIMENTAL MODERNISATION OF COMBINED CORRUGATING-STACKING MACHINES. S.G. Kutikov. Stroit. Mat., 1962, 8, No.1, 23-26.

All the types of combined corrugating-stacking machines used at present in Soviet Union for the production of asbestos cement tiles and sheets exhibit certain shortcomings. The author describes in detail a successful modernisation of a CM-279 corrugation and a Brotsenskii-type combine.

- 155 INSTALLATION OF ASBESTOS CEMENT PIPELINES FOR SURFACE WATER MAINS WORKING UNDER PRESSURE. Byull. Stroit. Tekhniki, 1962, 19, No.2, 20-21.

This instruction relates to the installation of asbestos cement pipelines for surface water mains working under a pressure of 12kg/cm^2

- 156 A FIVE YEAR EXPOSURE STUDY OF EMULSION PAINTS. New York Society for Paint Technology. Official Digest 1961, 33 442, pp. 1455.

Application of 36 paints to glazed asbestos shingles are discussed.

157 IMPROVED APPARATUS AND PROCESS FOR MANUFACTURING CEMENT ARTICLES. British Patent 885,188. Patent & Licensing Corporation.

An object of this invention is to provide an improved process and apparatus for the manufacture of asbestos cement products by a dry process. Figure 1 is a diagrammatic cross section of a machine and Figure 2 is a perspective view of a section of pipe made in accordance with this invention.

With reference to Fig. 1 there is shown a hopper 10 which extends the width of the machine and contains agitator rolls 11 adapted to mix and prevent packing of the contents of the hopper. The hopper may contain a mixture of cement, asbestos and sand. Finger roller 12 controls the feed-through opening 13 extending across the bottom of the hopper the width of the machine. The material falls down upon a pair of intermeshed star-shaped gears 15 or finger rolls which tend to fluff the materials and distribute it more evenly across the width of the machine. The material then falls upon a pony belt 16. Another fingered roll 17 continues the levelling process as the pony belt carries the material past a rotary brush 18. The material again passes through intermeshing gears 19, similar to gears 15. By the use of this combination of gears, pony belt and brush, the material is finally dropped on a moving felt 20 in a pattern which may be described as a raindrop pattern.

2 The felt is preferably a papermaker's blanket or felt which is continuous and passes in front of a spray of water 21 and whipper 22 for the two-fold purpose of removing any particles of cement or the like which may have passed the mandrel. The excess water is pressed out by passing the felt over a number of rollers, or if necessary, between press rolls before passing under the hopper where it receives the raindrop pattern of cement. The felt 20 passes in contact with a smooth mandrel 23 which is urged against opposition roll 24 over which the felt passes. Any one of a number of means may be used to urge the mandrel against the opposition roll as are well known in the art. The mandrel may be urged simply by its own weight but preferably a third roll or another pair of rolls may be applied against the mandrel in order to exert a pressure against the cement particles which are building up on the mandrel. The pressure between the mandrel and the opposition roll causes sufficient water to be squeezed from the felt wetting the cement particles. The thickness and other contacts of the felt can be controlled as well as the water applied to it such that the amount of water squeezed out will be sufficient to set the cement, but not too much to form a slushy body which is not easily pressed. The whole felt together with various guide rolls are mounted on a suitable support 25.

There is also shown a hydraulic lift device 26 which may be suspended from an overhead rail 27 such that mandrels containing the cement composition may be quickly removed and other mandrels put in place.

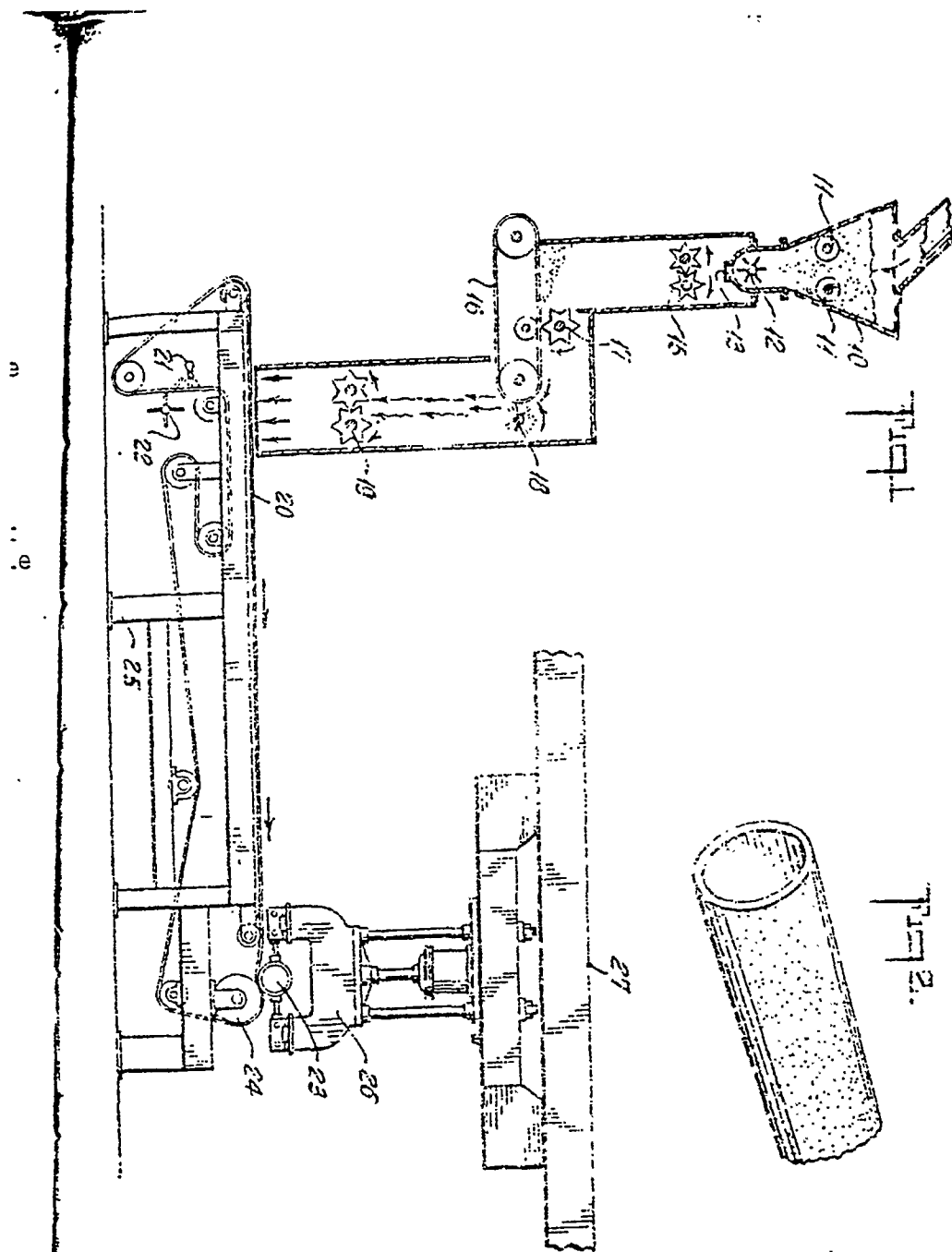
While the papermaker's felt is preferable, the device may also utilize other webs which may or may not carry their own water. In the use of a web not carrying water, a spray may be located above the web either before or after the application of the cement particles. One formulation which has been found suitable for forming an asbestos-cement pipe involves the use of 23% by weight of 4K asbestos, 48% of Portland cement and 29% of silica or finely ground sand passing a 200-mesh screen. Other proportions, other types of asbestos fibre, or introducing other fibres such as fibreglass, rock wool, wood fibre and the like may be utilized. Other water settable cements may be used, and these include, besides Portland cement, lumnite cement or plaster.

The pipe may be removed from the mandrel by any of the known methods including introducing a bubble of air between the rotating mandrel and the surface of the pipe. The pipe may be air cured, autoclaved or both.

It is claimed that the apparatus and process have a number of outstanding advantages. The equipment is less expensive than wet process equipment, there is no problem of water disposal, no problem of formulating to permit drainage and the strengths of the products obtained are very high because high pressures can be applied before the material has had an opportunity to set up. For any given pressure applied to the mandrel the pipe will be stronger than equivalent wet process pipe made at the same pressure. Since there is no problem of drainage as compared with the wet process, the machine may attain very high speed and consequently it is possible to make a product, as for example, a pipe of a given thickness, say $\frac{1}{2}$ " by the use of a large number of layers of asbestos cement. The product made with a larger number of layers other things being equal, tends to be stronger than a product made with fewer layers. Asbestos-cement pipe made in accordance with the present process and apparatus may be used for air ducts, sewer pipes and sewer mains or electrical conduit. The higher pressure pipe may also be used for water supply. Flat sheets made by the present process have limited shrinkage and excellent strength.

158 RUSSIAN P.140,722. WATERPROOFING PRODUCTS OF CONCRETE ASBESTOS CEMENT, PLASTER ETC., I.V. Provinteer.

The above products are coated or impregnated with a 30-35% solution



of vulcanised rubber (scrap rubber) in green or anthracene oil. The rubber content may be reduced by adding to the solution a high melting point bitumen (up to 60%). Coloured coatings are obtained by the addition of up to 10% of a polystyrene emulsion containing the desired pigment. A silver-coloured coating may be produced by adding 10% of aluminium powder to the rubber solution. The coating may be applied in the cold or, for complete hardening, at 140-180°. Coated surfaces can be washed with cold or hot water and soap.

PART 3. ASBESTOS TEXTILES.

- 159 POLYURETHANE FOAM-ASBESTOS PROTECTIVE MASKS. Officiel des Matieres Plastiques, 1961, 8, No. 80, 344-345.

A protective mask for high temperatures, developed by Allied Chemical Co. consists of a combination of semi-hard polyurethane foam and aluminium-coated asbestos cloth which reflects the heat radiation.

- 160 -LIGHTER REINFORCED PLASTIC. Iron Age, January 4, 1962, 189, No.1. p. 133.

Brief news note about asbestos cloth reinforced nylon plastics Tayloron 5031 and 5033, made by Taylor Fiber Co., Valley Forge, Pa.

- 161 B.P. 887,304. METHOD AND APPARATUS FOR APPLYING SYNTHETIC RESIN TO A SUPPORT. J. Szabady.

This invention concerns a method of applying a softenable thermosetting resin layer to a sheet-like support in which the resin is heated to a temperature above its softening point and extruded in the form of a foil onto the support (e.g. asbestos paper or cloth) while still soft.

- 162 EFFECT OF INFRA-RED HEAT ON TENSILE STRENGTH OF TWO REINFORCED PHENOLIC LAMINATES. Forest Product Lab. U.S. Department of Commerce AD-255 679.

The study was conducted on phenolic laminates made with either glass or asbestos fabric and machined at 45 degrees to the natural axes.

- 163 GERM. P.1,123,305. ASBESTOS DIAPHRAGM. Pittsburgh Plate Glass Co. The diaphragm is made from asbestos fabric coated with chlorinated drying oil.

- 164 ASBESTOS FIBRES MATERIALS AS SUBSTITUTES FOR ASBESTOS FABRICS. N.T. Dodnov and K.V. Khartke, Kanchuki i Rezina, 1961, 20, No.11, 35-38.

Non-textile grades of asbestos fibres can be used for the production of materials which can replace expensive woven asbestos fabrics in many applications such as, for instance, heat insulation. An example of materials of this type is "asboteploizol". It is produced by forming a felt from separated and cleaned asbestos fibres, impregnating it with an aqueous emulsion of thermoreactive organosilicon resins and drying the product. Thermo-insulating properties of "asboteploizol" exceed by far those of asbestos fabrics. Another material of this type "asboplast" produced using chloroprene later as a binder, is an excellent reinforcing agent for "asboplastics" which have high mechanical strength.

- 165 GERM. P.1,123,296. DIAPHRAGMS FOR ELECTROLYTIC CELLS
DEMAG - Elektrometallurgie G.m.b.H.

The edges of an electrolytic diaphragm, made e. . of asbestos cloth are impregnated with a synthetic resin having a wax-like consistency and a low melting point, e.g. polyethylene wax, and then the resin is irradiated with gamma-rays until it acquires a rubber-like consistency.

PART 4. ASBESTOS FRICTION MATERIALS.

- 166 U.S.P. 3,003,980. EPOXY BASE FRICTION MATERIAL. General Motors Corp.

The composition for an automobile starter motor armature brake, washing machine clutches etc., consists of:

Epoxy resin - 100 - parts by weight:
Short fibre asbestos - 8 - parts by weight
Cardolite(cashew nut) - 8 - parts by weight
Triethylene tetramine (accelerator) - 4 - "

The above composition enables one to apply the material to be cured in its place of use rather than requiring a preformed slab to be applied as such under heat and pressure. It is further claimed that laboratory tests show that in applications involving temperature not greater than about 450° F, the friction material of the present invention has frictional properties equivalent to or better than conventional friction materials using phenolformaldehyde binders and made under conditions of elevated temperatures and pressures.

- 167 PRODUCTION OF NEW TYPE OF BRAKE LININGS THROUGH HEAT PROCESSING. Ind. Heating December 1961, 28, No.12, pp. 2431-2432, 2434, 2444-2445.

Brake lining manufacture at Chrysler Corp.'s Cycleweld Chemical Products Co. is described.

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- 168 ANTIFRICTION COMPOUNDS BASED ON EPOXY RESINS. O.L. Petrov. Soviet Plastics. January 1961, No.1, p.40.

ics.

Plastics based on epoxy resins are now widely used as antifriction materials.

- 169 SELECTING THE RUBBER TYPE FOR THE MANUFACTURE OF ASBESTOS FRICTION PARTS. I.T. Tarasenko & I.M. Griasnova. Kauch. i Rez. (Crude and Vulcanized Rubber) Apr. 1961, 20, No.4, pp. 22-24.

PART 5. REINFORCED PLASTICS.

- 170 RUSSIAN P.141,172. FERRO-CERAMIC MATERIAL. D.T. Zelenskii.

A ferro-ceramic material having high friction co-efficient, high wear and heat-resistance and good surface workability, is made of 55-65% of iron powder, 15-20% refractory clay, 5-10% asbestos (calcined at 1100°C) and 15-18% sodium silicate. The mixture is pressed or moulded, air-dried for 3-5 days, then sintered in a neutral or reducing atmosphere at 1200-1300°C and slowly cooled.

- 171 Soc. Plastics Ind., 17th Annual Tech. & Management Conf., Reinforced Plastics Div., Chicago, 1962., the following papers were presented: ASBESTOS IN POLYESTER PREMIX MOULDING. R.T. Crouch & J.J. Thomas.

Physical properties are given for premixes containing asbestos alone as well as asbestos-glass and asbestos-sisal mixtures.

- 172 ASBESTOS REINFORCED THERMOSETTING RESIN PIPE AND FITTINGS FOR USE BY THE CHEMICAL PROCESS INDUSTRY. R.T. Crouch and others.

Development and physical properties of Johns-Manville's Chemtite pipe are described.

- 173 USE OF POLYESTER RESIN IN AUTOMOTIVE BODY SOLDERS.
E.R. Pelton.

Asbestos floats are mentioned as one of the commonly used fillers.

- 174 AEROSPACE USE OF PLASTIC HARDWARE AND THERMAL INSULATION.
James J. Sewell & James K. Kuno.

Asbestos-filled phenolics are among the materials discussed.

- 175 STUDY OF THE VARIABLES AFFECTING THE CORROSION RESISTANCE
OF PREMIX. J. Yovino, B.E. Boeker & A.F. Torres.

The effects of fillers, reinforcements and resin systems are evaluated for polyester premixes. Chrysotile floats and anthophyllite asbestos are among the fillers.

- 176 ASBESTOS-REINFORCED PLASTICS. Dominick V. Rosato.

This bulletin provides current information on the use of asbestos in reinforced plastics.

- 177 B.P. 890,304. IMPROVEMENT RELATING TO BOARDS OF RESIN-
IMPREGNATED MATERIALS. British Transport Commission.

The notice-boards and signed boards of laminated construction contain a reinforcing sheet e.g. asbestos.

- 178 U.S. PATENT 2,993,799. PLASTIC COMPOSITION. C.L. Blake.

The lightweight constructional material is prepared from the following mixture:

Asbestos	12.75%
Plastic	21.25%
Plasticizer	8.5 - 15%
Inert filler	42.5%

The composition is suitable for manufacture of railroad ties switch board plates and containers.

- 179 B.P. 886,868. ACETYLENE CONTAINER FILLER AND METHODS.
Chemetron Corp. U.S.A.

High porous filler for acetylene contains 20-30% asbestos fibre.

- 180 BRITISH PATENT 885,446. COMBUSTION CHAMBER RESISTANT TO HIGH TEMPERATURES. Haveg Industries Inc.

Haveg Industries recently patented a special process for the manufacture of rocket combustion chamber which are protected by one or more layers of phenol-formaldehyde resin and acid washed asbestos fibre. In the quoted example the rocket tube blast liner was placed in service with a motor rocket tube and fired at a temperature of over 2205°C.

t- The velocity of the gas in the tube was about 0.7 to 1.5 times the
b- velocity of sound. It is claimed that the phenol-formaldehyde-asbestos fibre liner withstood the blast and the heat of the gases during the entire flight period. The tube on recovery was examined and found to be intact within the limits of burning time (several minutes). A carbonized surface layer on the liner protected the remainder of the tube against erosion and further decomposition. The outside surface of the liner was completely unchanged as were the parts of the rocket which required protection from the heat, blast and corrosion of the combustion gases.

PART 6 JOINTING, COATING, SEALING COMPOSITIONS.

- 181 B.P. 887,277. ELECTRIC ARC WELDING PROCESS. Union Carbide Corp.

n This invention relates to a process of arc welding with a fusible electrode, in which the electrode is provided with a coating composition. Asbestos is mentioned as a filler.

- 182 ASBESTOS-SYNTHETIC RESIN COATINGS. W. Surowiak, Tworzywa, Guma, Lakiery (Warszawa) 1960, 5, No.9, 272-277

Asbestos-synthetic resin coatings can be advantageously applied to metallic machine parts sliding without lubricants. Suitable materials include certain asbestos laminates or asbestos pressed materials, such as e.g. "Retinax" (an asbestos-barite composition).

- 183 FRENCH PATENT 1,284,834. COATING COMPOSITIONS. Conch Intern. Nethane Ltd.

Compositions for coating walls of containers for storage of liquids at low temperatures comprise 45-53 parts of epoxy resins, 7-10 parts of Al_2O_3 , 33-45 parts of asbestos and 3.5-4.5 parts of a polymerisation agent for the epoxy resin, preferably diethylaminopropylamine. The polymerisation is pref. carried out at about 93°C.

- 184 BELGIAN PATENT 601,126. HEAT RESISTANT SHEET.
VEB Leuna Werke Walter Ulbricht.

A sheet resistant to heat, acids and alkalis consists of asbestos glass or synthetic fibres bonded together with a binder comprising polyolefines and, if desired, poly-isobutylene, together with liquid phenol-formaldehyde resins and mineral fillers such as kaolin, BaSO_4 etc. A natural or synthetic rubber-adhesive may also be added. In an example, the material consists of 4 kg. polypropylene, 11 kg. polyisobutylene, 45 kg. BaSO_4 , 30 kg. kaolin, 38 kg. asbestos fibres, 10 kg. liquid phenol-formaldehyde resin and 0.6 kg. colouring matter.

- 185 CHEMICALLY STABLE ASBESTOS-VINYL MASTICS. Soviet Plastics, February 1961, No.2, p.40.

In the Soviet Union an asbestos-vinyl mastic is at present used for lining the external and internal surfaces of equipment, foundations, coverings etc. An asbestos-vinyl mastic modified with bitumen or graphite powder is recommended for lining equipment coming into contact with 30% H_2SO_4 . Asbestos-vinyl mastics modified with epoxy resin may be used for cementing tiles to floors in contact with 30% sulphuric acid, 5% nitric acid and 30% alkali at room temperature.

- 186 RUSSIAN PATENT 141,093. LININGS FOR INDUCTION HEATERS.
W.S. Sassa et al.

Linings for induction heaters consist of alternate layers of asbestos paper and a refractory plastering composition. Suitable plastering compositions for induction heaters working at temperatures up to 900°C (from 950° to 1300°C) comprises: water glass 40-50% (35-45%), sodium fluosilicate 5-6% (1.5-3%), and ground chamotte 40-60% (55-62%). The thickness of asbestos layers is 0.5-3mm. and that of plastering layers is 0.3-3mm.; the total thickness of the lining is 10-30mm. These linings possess very good heat-insulating properties.

- 187 GERMAN PATENT 1,126,299. PROCESS FOR THE PREPARATION OF ASBESTOS SHEETS FROM AQUEOUS SLURRIES. Armstrong Cork Co.

An aqueous slurry of chrysotile asbestos fibres is treated with a water-soluble condensation product of sulphonated naphthalene and formaldehyde, which reacts with the surface of the asbestos fibres. The resulting slurry is treated with a synthetic rubber latex, and the rubber is uniformly deposited on the asbestos fibres. Then, sheets of coated asbestos fibres are prepared by known methods.

PART 7 PLASTIC MATERIALS AND PIPES.

- 188 B.P. 886,375. IMPROVEMENTS RELATED TO FLOORING.
Semtex Ltd.

The upper layer of a composition comprises filler (7R asbestos) in intimate admixture with a binder based on a chlorosulphonated polyolefine.

- 189 TECHNICO-ECONOMICAL FACTORS OF THE PRODUCTION OF VARIOUS SYNTHETIC FLOORING MATERIALS. V.P. Storozhenko and F.N. Serkova Stroit. Mat. 1962, 8, No.2. 18-21.

Conventional flooring materials, like boards, parquet plates etc., are expensive and unsuitable for the modern building methods. A number of new flooring materials are proposed including, for instance asbestos-polyvinyl chloride plates (thickness of 2 mm) and asbestos-coumarone plates (thickness of 3-4 mm). The use of these synthetic materials may result in a reduction of total yearly expenses on flooring materials in S.S.S.R. by as much as 80 mil. roubles.

- 190 SYNTHETIC RESIN FLOORINGS. J. Plantier. Rev. Belg. Matieres. Plast., 1961, 2, No.4, 339-345.

Various types of synthetic resin floorings (continuous or consisting of plates) are described. The most frequently used reinforcing material is asbestos, in the form of powder or fibres. It is used in amounts varying from 30% to 65% (with respect to the weight of the composition).

- 191 RUSSIAN PATENT 138,039. PREPARATION OF SYNTHETIC RESIN N.I. Burda.

Bewzyl chlondi is subjected to a thermal condensation (with liberation of HA^2) in the presence of hexachloro-cyclohexane acting as an initiator. The resin obtained can replace coumarine resins used normally in the production of asbestos-resin tiles.

- 192 PLASTIC-LINED SPUN CONCRETE PIPE BECOMES INCREASINGLY POPULAR IN GERMANY. Pipes & Pipelines, March 1962, p.49.

One of Germany's leading manufacturers of concrete pipes has successfully combined the two materials to give a range of products which are becoming popular, particularly for use on heavy industrial sites.

- 193 BRITISH PATENT 888,899. PANELS FOR STRUCTURAL AND NON-STRUCTURAL WALLS, PARTITIONS, FLOORS AND ROOF DECKING. Shearwater Ltd.

A panel comprises a pair of facing sheets composed of asbestos containing material between which is interposed an infill or core of expanded resin e.g. polystyrene and a frame bounding said core.

- 194 REPORT ON INVESTIGATIONS INTO THE USE OF PITCH FIBRE PIPE FOR CARRYING CHEMICAL SOLUTIONS. Pipe and Pipelines March 1962, p.84.

This report covers a series of tests carried out at the request of Pitch Fibre Pipe Association to provide factual information on the suitability of pitch fibre pipes in various circumstances.

- 195 UNPLASTICIZED PVC PIPES AND FITTINGS. D.A. Trebucq. Applied Plastics, April 1962, p.27.

The author discusses some of the recent developments, now available to industry in PVC pipes and fittings and their applications.

- 196 PITCH FIBRE PIPES. Pipes & Pipelines, March 1962, p.80.

Pitch fibre drain pipes have been specified for use as foul drains in the North Klang Straits project in Malaya, for Malayan Railways.

- 197 NEW GLASS PIPE ENABLES RUSSIANS TO MANUFACTURE CONCRETE RADIATORS. Pipes & Pipelines, February 1962, p.76.

The radiators contain a heating coil of a special grade of glass pipe. It is claimed that they are relatively cheap, require the minimum of space, are easy to install and hygienic and they permit considerable saving in metal (a factor of great importance in the U.S.R.R.)

- 198 POLYPROPYLENE PIPE PRODUCTION IN ITALY. Pipes and Pipelines, February 1962, p.51.

The Firm Montecatini of Milan is now supplying 'Moplen' polypropylene to a large number of pipe and pipe-fitting manufacturers throughout the country.

PART 8 ASBESTOS PAPER AND INSULATING MATERIALS.

- 1- 199 U.S.P. 3,001,882. THERMAL INSULATING MAT. Owens-Corning Fiberglass Corp.

Asbestos is mentioned as an additive.

- 200 RUSSIAN PATENT 142,178. HEAT - AND SOUND - INSULATING MATERIAL BASED ON ASBESTOS AND ALUMINIUM POWDER. E.F. Druzhinina et al.

A heat - and sound - insulating material having a low bulk density comprises 85-90% of chrysotile asbestos and 10-15% of aluminium powder.

- 201 BELGIAN P.604,941. NON-INFLAMMABLE FILTER MATERIAL. Comp. de Saint-Gobain.

A dispersion of cellulose, glass fibres and asbestos is prepared in an aqueous metal silicate solution in such a way that the cellulose is swollen by the alkali metal silicate; then Ca Cl_2 is added in order to precipitate calcium silicate. The suspension obtained is treated, after the addition of other additives used in paper production by known methods to obtain a sheet of filter material. A vinyl resin, e.g. polyvinyl acetate, may be added in the form of an emulsion to the aqueous dispersion of the mineral fibres before the addition of cellulose.

- 202 U.S.P. 3,005,745. INORGANIC PAPERS AND METHOD OF MAKING SAME. General Aniline and Film Corp.

In the preparation of paper from siliceous stock such as silica fibres, glass or blue asbestos fibres the addition of minor amounts of a polyvinyl lactrom results in the product having high strength and flexibility.

- 203 ASBESTOS: GENERAL, PRODUCTION, PROCESSING. Part 31. Gummi Asbest Kunststoffe. Oct. 1961, 14, pp.928, 930, 932, 934.

A continuation of the discussion of asbestos speciality papers is followed by the first section on their uses, in this case in the electrical industry.

- 204 GERMAN PATENT 1,117,031. PRODUCTION OF HEAT-RESISTANT ARTICLES FROM SILICON-CONTAINING FIBRES AND A BINDER.
L.O.F. Glass Fibers Co.

As lurry is prepared from silicon-containing fibres (preferably glass fibre) fillers (such as silica, alumina-silica, aluminium hydroxide, alkali or alkaline earth metal sulphate or alkaline earth metal carbonate in grain form; asbestos can also be used) and an inorganic binder (consisting of colloidal silica, alumina, aluminium phosphate or their mixture). From this slurry, a fibrous felt is formed and, subsequently, dried.

- 205 GERMAN P.1,122,242. PROCESS FOR THE PRODUCTION OF A HEAT - AND SOUND - INSULATING LINING FOR WALLS AND THE LIKE. J.W. Roberts Limited Midland Works.

A heat - and sound - insulating lining is produced by spraying e.g. a wall with a mixture of asbestos fibres and a liquid binder, and compressing the coating using a tool provided with protrusions forming a desired pattern which thus imprints this pattern on the surface of the lining.

PART 9. REFRACTORY FIBRES.

- 206 ELEVATED TEMPERATURE BEHAVIOUR OF FIBRES. Stanley Schulman. U.S. Dept. of Commerce AD-267, August 1961.

A study was conducted to determine the mechanical behaviour of fibres at temperatures up to 2000°F for varied periods of time. These fibres are candidate materials for decelerators and expandable and rigid structures for satellites or space vehicles.

The fibres tested included: Glass textiles, synthetic fibres metallic textiles of heat resisting alloys, Tungsten and Molybdenum.

- 207 INVESTIGATION OF GLASS FIBRE STRENGTH ENHANCEMENT THROUGH BUNDLE DRAWING. Armour Research Foundation. U.S. Dept. of Commerce AD-259 754, April 1961.

Attempts were initiated to develop methods capable of producing glass fibres on a production quantity basis having a strength of about 550,000 to 600,000 psi. Materials to be used for the fibres will be various glasses such as E glass and other high strength, high modulus glasses in rod form.

- 208 STRUCTURAL FABRIC PROGRAMME. Goodyear Aircraft Corp.,
U.S. Dept. of Commerce AD-266 500, October 1961.

A programme, as related to aerospace applications was initiated to provide a means of manufacturing large low-density AIRMAT structures made of metallic cloth and yarns capable of small volume packaging.

- 209 IMPROVEMENT OF REINFORCED PLASTICS. General Electric Co.
Quarterly Progress Rep. U.S. Dept. of Commerce AD-266 277,
September 1961.

Development of hollow-glass and quartz-fibre-reinforced plastic specimens and the evaluation of their mechanical thermal and electrical properties was initiated. Investigation showed that manufacture of small diameter E-glass hollow fibres is feasible. Simultaneous drawing of 35 E-glass fibres produces a uniform outside diameter but with variations in wall thickness. E-glass because of impurities, has a tendency to boil, quartz does not. Drawing of single hollow filaments of quartz results in reasonable consistent geometrical dimensions.

- 210 GERMAN PATENT 1,120,045. PROCESS FOR BONDING OF METALS.
Deutsche Gold - und Silber - Scheideanstalt.

A fibre web or matt (glass fibres, asbestos or sisal) is impregnated with a compound containing a reactive Cl atom, or with a subst. N-dialkylamine (containing at least one aromatic group), or with a tert. aromatic amine, and, optionally, an accelerator such as a copper compound or an organic sulphur compound. After impregnation the web is dried for a prolonged time period. For use, the impregnated web is coated with an adhesive of the type used for metal joining (containing e.g. monomeric methylmethacrylate, polystyrene, neopren, acrylic acid and a peroxide hardening agent) and then inserted between the metal surfaces to be joined (without using any pressure). The joint hardens after one day.

- 211 B.P. 889,815. BONDING OF FIBROUS MATERIALS. The
Distillers Co. Ltd.

This invention relates to bonding of fibrous materials e.g. asbestos in which no heating is required. In the quoted example 25 parts by weight of asbestos fibre were mixed with 28.4 parts of sodium silicate. The resulting mixture was compressed into cylindrical mould at 90 lbs/sq. inch. pressure. The moulded mixture was treated for 10 seconds with gaseous carbon dioxide. A hard compact block of material was obtained which was resistant to attrition.

- 212 W.G. Cox & H.L. Crispin. FILAMENT WINDING RADOMES
AND MISSILE NOSE CONES. Glass Ind. 42, 1, 33 (1961)

A brief description is given of the techniques, equipment and procedures used in filament winding resin - impregnated quartz fibres on a mandrel.

213. SILICA-BASE PLASTIC FOR HIGH TEMPERATURE USE. Mat in
Design Engineering, 55, 1, 170 (1962)

214. PHENOLIC LAMINATES FOR ABLATION APPLICATIONS. Mat. in
Design Engineering, 55, 1, 7, (1962)

- 215 U.S. PATENT 2,916,177. METHOD AND MEANS FOR COATING OF
FILAMENTS. Owens-Corning Fiberglas Corp.

- 216 U.S. PATENT 2,979,424. METAL COATED GLASS FIBRES AND
- METHOD OF MAKING THEM. Owens-Corning Fiberglas Corp.

- 217 U.S. PATENT 2,980,956. METAL APPLICATORS FOR GLASS
FILAMENTS. Owens-Corning Fiberglas Corp.

- 218 U.S. PATENT 2,951,771. METHOD FOR CONTINUOUSLY FABRICATING
ON IMPERVIOUS METAL COATED FIBROUS GLASS SHEET.

- 219 BORON FILAMENTS. Materials in Design Engineering
1961, 54, 7, p.7.

Boron Filaments for high strength, lightweight structural composites are under development. Tensile strength of 500,000 psi and a modulus of 55 million psi have been reported for 4-mil dia. filaments, and significant strength is reported retained at temperatures as high as 1800° F. Initial applications may be in filament-wound reinforced epoxy structures. Filaments over 700 ft. long have been produced, a continuous process is under development. Source: Texaco Experiment Inc. Richmond 2, Van. Developed under Air Force sponsorship.

- 220 B.P. 889,583. MANUFACTURE OF FIBRE METAL COMPACTS. Armour
Research Foundation.

- 221 NON-METALLIC FIBROUS REINFORCED METAL COMPOSITES.
Materials Research Corp. U.S. Dept. of Commerce.
AD-265 943. September 1961.

The literature on fibres and fibre reinforced composites was reviewed and evaluated. It was concluded that in principle, non-metallic fibre reinforced metals can have the largest strength/weight and modulus/weight ratios of all known materials, exceeding the values of those presently available by many factors, particularly at elevated temperatures.

PART 10. MISCELLANEOUS.

- 222 BELGIAN P.606,544. TREATMENT OF ASBESTOS FIBRES.
Flammer Seifenwerke A.-G.

Asbestos fibres, or their products containing organic substances which cannot be removed by washing with water, are treated with an aqueous solution of an alkali metal silicate or phosphate, pref. sodium ortho - or pyrophosphate, or sodium hexametaphosphate or a sodium salt of a phosphoric polyacid, at an elevated temperature, e.g. at the boiling temp. of the solution. The treatment does not impair the tensile strength of the fibres.

- 223 RESEARCH & DEVELOPMENT OF HIGH TEMPERATURE-STABLE
INORGANIC RESINS & ELASTOMERS. J. Feltzin. U.S.
Dept. of Commerce AD-267 203.

Three methods for extraction of metal ions from the matrix of asbestos and mica were investigated. These were treatment with the chelating agent 8-hydroxyquinidine, leaching with concentrated HCl and leaching with 10% aqueous NaOH. Some success was achieved with asbestos treatments. Attempts to increase the molecular weight of the polymer derived from the reaction of an organohalosilane and Na silicates were only partially successful.

- 224 ON THE ION HYDROXONIA IN AMPHIBOLES. I.V. Ginsburg
and G.V. Yuhnevich. Geokhimiya, 1962, No.1. 30-36

In order to elucidate the character of water contained in amphiboles infrared spectra of seven amphiboles were examined. It is concluded that in amphiboles there exists three types oxygen-hydrogen group, viz. hygroscopic water, OH groups and OH_n groups, possibly H_3O^+ .

- 225 BELGIAN P.606,354. TREATMENT OF CRUDE ASBESTOS.
K.A. Oesterheld (Germ.)

Crude asbestos for the production of asbestos cement, asbestos fabrics, asbestos cardboard, asbestos-containing compositions for floor coverings, etc., is prepared by making a suspension of the crude fibrous material agglomerated to bundles in a liquid and passing the suspension between working surfaces where the fibres are subjected to rubbing and flexing. A material which increases rubbing e.g. sand, a quartz powder etc., may be added to the mixture.

226. U.S.P. 3,002,863. SMOKING TOBACCO MIXTURE. R.J. Shaw.

A smoking mixture comprises a plurality of pieces of tobacco and a plurality of absorbing elements consisting of heat resisting fibre e.g. asbestos coated with activated carbon. Such tobacco mixture is designed to remove irritating substances from the smoke.

227. ASBESTOS IN POLYETHYLENE BAGS. Gummi - Asbest - Kunststoffe, 1962, 15, No.3, p. 210.

Moisture-proof polyethylene bags for asbestos fibres have been introduced by Lake Asbestos of Quebec Ltd. Experiments have shown that even under very severe conditions the initial moisture contents of chrysotile asbestos fibres (about 1%) remained substantially unchanged. The polyethylene bags are stronger than jute or paper bag, and they can withstand even a very rough handling.

PART 11. REVIEW OF JOURNALS.

ASBESTOS - FEBRUARY 1962.

807, Western Savings Fund Bldg., Philadelphia 7, Pa., U.S.A.

- 228 ASBESTOS TEXTILE INSTITUTE p.2.
Report on Association's activities.

- 229 THE HIDDEN SPLENDOR MINING CO., p.14.
The plant will be constructed with an initial annual capacity of 15,000 tons. This may be increased to 30,000 at a later stage. The Huxley Development Co., of New York City is co-operating with Hidden Splendor in marketing the asbestos products.

- 230 NEW PLASTIC PACKAGE ELIMINATES ASBESTOS MOISTURE BUILD-UP. p.22.
Lake Asbestos of Quebec new polyethylene package eliminates a troublesome problem in storing and shipping asbestos.

ASBESTOS - MARCH 1962.

- 231 ASBESTOS PRODUCTION - WORLD PROSPECTS W.E. Sinclair, p.2.
Asbestos production in major producing countries is reviewed.
- 232 75% DUST REDUCTION IN ASBESTOS SPINNING p.16.
The method of the removal of airborne dust at textile plant of Garlock Inc. is described.
- 233 MARKET CONDITIONS p.30.
- 234 ASBESTOS CORPORATION LTD. p.38.
Net earnings of Asbestos Corporation Ltd., for 1961 were \$4,085,684 compared with \$3,259,653 of the previous year

AC-25 INTERNATIONAL ASBESTOS-CEMENT REVIEW.
Editions Girsberger, Zurich, Switzerland.

- 235 Building the churches for today. J. Pichard.
- 236 Parish church at Salzburg, Austria, W.Holzbauer, F.Kurrent.
- 237 Church in a new quarter of Grenoble. M. Potie, R.Pupat.
- 238 Two Danish churches. Holger Jensen.
- 239 Churches for Central Africa. Justus Dahinden.
- 240 Three funeral chapels. F. Berndt, D.E. Kreuter, P.G. Lachmann.
- 241 Chapel near Vezelai, France. Marc Henard.
- 242 A new Swiss church, Ernst Gisel.
- 243 Parish church in Essen, Ruhr. Emil Steffann.
- 244 Chapel of a girls' boarding school in Rome. G. Sterbini.
- 245 Dutch reformed church at Welkom, Orange Free State.
- 246 Paris Church in Northern Switzerland. P. Chevre & P. Dumas.
- 247 Mission church in Tungkang, Formosa. R.L. Neusch.
- 248 Church reconstruction. Reinhard Riemerschmid.
- 249 St. Emmanuel Church, Tolworth, Surrey. K. Wood.
- 250 Church near Ferrara, Italy. Pierluigi Giordani.
- 251 Sunday School chapel in Langres.
- 252 Tolcher & Taylor. St. Mark's Church at Finchley.
- 253 Movable church in Argentine. Delfin Conway.
- 254 Air conditioning of the papal reception hall at Castelgandolfo.